- Determine impact of degraded equipment and set plant priorities to ensure timely repairs. Drive problem resolutions.
- Develop, execute and document thorough troubleshooting plans.
- Collect, preserve and document all physical evidence resulting from equipment failure.
- Develop operating contingencies for degraded or out–of-service equipment.
- Perform Preventive Maintenance (PM) as scheduled. Document feedback to improve PM program effectiveness and record failure history.
- Take immediate action to resolve unexpected or unacceptable performance of equipment if it occurs.

14. Configuration Control

- Manipulate plant component per approved procedure.
- Immediately notify Operations if:
  - Equipment configuration is different than expected.
  - A question exists on what position a component should be left in.
  - A component is inadvertently mis-positioned.
  - Barriers are discovered degraded.
- Do not attach scaffolds or ladders to sensitive or safety- related equipment without proper authorization.
- Do not step or climb on snubbers, pipe hangers, plant equipment, insulation, copper piping, hoses, tubing, instruments racks, conduit or cables.

15. Housekeeping

- Store tools and equipment properly when work is completed.
- Maintain walkways and equipment access free from obstruction.
- Maintain work area cleanliness to protect personnel and prevent Foreign Material Exclusion (FME).
- Keep shop areas clean, neat, orderly, and professional.
- Leave work areas cleaner than when work began.

16. Foreign Material Exclusion (FME)

- Control entry of personnel and materials into Foreign Material Exclusion Zones (FMEZ).
- Prevent and/or minimize entry of Foreign Material.
- Document recovery from intrusion of Foreign Material – Stop Work, notify supervisor, and do not attempt to recover Foreign Materials until instruction is received, unless not acting would obviously make the situation worse.
- Initiate a Condition Report (CR) for FME loss of control. Ensure that “FME” is entered in the CR title box.
- Document all FME as found/as left inspection, cover usages/ removals to ensure key maintenance records.
- Prohibit clear plastic, tape or jewelry in FME zones.
- Ensure that a final FME inspection is performed before closing components.
- Ensure FME Plan is completed in full.

17. Documentation or Work

- Accurately describe the “As Found”, “Work Performed” and “As Left” condition of equipment.
- Use condition codes to support PM scope and frequency determinations.
- Provide work package feedback to improve future planning.
- Verify completed work packages contain required documentation and signoffs.

18. Productivity

- Identify the most efficient means of accomplishing tasks.
- Schedule work to accurately reflect expected start time and durations.
- Staff jobs appropriately with qualified personnel.
- Critique significant jobs to identify productivity enhancements.
- Report job completion to supervisor and seek additional assignments.

19. Proper Use of Tool and Equipment

- Use proper tool(s) to ensure worker safety, to protect plant equipment, and ensure equipment reliability.
- Inspect portable electric tools for damage or frayed wires prior to use, and periodically during use, to prevent electrical shock.
- Use Ground Fault Circuit Interrupters at power sources.
- Wear proper safety lines and harnesses when climbing or working at height.
- Use air flow breakers on all pneumatic tools.
- Select Measuring and Test Equipment (M&TE) for appropriate range, accuracy and test medium.
- Inspect all electric and gas welding equipment prior to and periodically during use.
- Control tools at job site.
- Check calibration dates on tools to ensure they are in date.

20. Maintenance Standard and Practices

- Have work packages or a copy available at work location; refer to often.
- Conduct safety verifications walk-down to ensure equipment readiness prior to work.
- Identify parts for re-assembly.
- Use correct parts and approved materials for job.
- Supervisors shall frequent jobs site to ensure work progresses safely and efficiently.
- Conduct sufficient turnovers to allow relief to carry on without incident or undue delay.
- Protect floors, walls, equipment, etc. throughout course of work.

21. Teamwork

- Share insights and experience with others.
- Solicit and respect different views and ideas to strengthen decision-making.
- Solve problems by involving others.
- Make additional effort to work across cultural barriers.
- Align to the team’s shared goals and objectives.
- Accept actions and complete on time.
- Conduct team critiques - learn and improve.
- Achieve team goals and meet individual expectations.

22. Work Management

- Participate in and be accountable to our work control process.
- Review schedule for conflicts; challenge job duration, preparations and interfaces.
- Perform pre-job walk downs to verify required support, preparation and equipment staging.
- Verify equipment is properly taken out of service and isolated.
- Work to the schedule – start and complete each job on time.
- Notify supervisor of a schedule job delay greater than 10 minutes.
- Notify the Work Week Manager or Outage Control Center (OCC) of a job delay or schedule greater than 30 minutes.
- Incorporate Lessons Learned to improve future job performance.
- Come to meetings on time, prepared and ready to provide input and answer questions.
- Identify and remove unnecessary barriers.

23. Self-Assessment & Continuous Improvement

- Be self-critical.
- Prevent complacency; identify opportunities for improvement.
- Reinforce desired behaviors and correct weaknesses.
- Perform self-assessments and benchmarking.
- Monitor for and take actions on adverse performance trends.
- Identify, document, share and act to improve upon Lessons Learned.
- Do things right the first time.

شركة نواة للطاقة
Nawah Energy Company
P.O.Box 112040
Abu Dhabi | United Arab Emirates

Maintenance Fundamentals

شركة نواة للطاقة
Nawah Energy Company

OR-REF-0006 Rev. 00

1. Reactor Safety

- Maintain the plant in accordance with procedures.
- Maintain component measurement and clearance within specification.
- Recognize and adhere to all regulatory requirements and environmental permits.
- Practice effective decision making consistent with WANO guidelines.
- Understand plant consequences of every action taken.
- Believe instrument response and indication unless proven otherwise.
- Maintain a questioning attitude; ask “why?”.
- Raise safety concerns to your supervisor.
- Maintain qualification and proficiency in assigned emergency response role.
- Ensure fire doors are latched after use.

2. Industrial Safety

- Be responsible for your own safety.
- Review lessons learned and applicable Operating Experience (OE) when planning work.
- Adhere to safety postings and barriers.
- Use the appropriate Personal Physical Equipment (PPE) for work to be performed.
- Ensure equipment is in a safe condition prior to beginning work.
- Know your personal limits both physically and mentally.
- Adhere to the working at heights and confined space rules.
- Use installed safety equipment.
- Do not bypass required equipment safeguards.
- Comply with chemical Material Safety Data Sheet (MSDS) requirements.
- Stop and correct unsafe behaviors or conditions.
- Be alert for changing conditions.
- Report all injuries big or small.

3. Radiological Safety

- Ensure you are on the correct Radiological Work Permit (RWP).
- Maintain strict compliance with RWPs.
- Know the work area dose rates and contamination levels.
- Know your accumulated dose – do not exceed limits.
- Adhere to radiological boundaries; do not alter.
- Practice As Low As Reasonably Achievable (ALARA):
  - Pre-plan work to minimize dose.
  - Move work to low dose areas if possible.
  - Use low dose waiting areas – do not loiter.
  - Use minimum number of workers to safely perform the job.
  - Use remote-handling tools if possible.
  - Maximize distance between you and radiation sources.
  - Avoid hot spots.
- Be proactive in identifying potential dose reduction opportunities.
- Practice good housekeeping.

4. Security

- Follow directions given by Nuclear Security Force personnel.
- Understand that all individual, materials and vehicles on company property are subject to search for prohibited material.
- Properly display and control security badge.
- Immediately notify security of a lost badge.
- Ensure security doors are latched after use.
- Remove ignition keys from vehicles within the protected area when not in use.
- Maintain positive control of visitors at all time.
- Immediate report security or fitness for duty violations.
- Adhere to security postings and barriers.

5. Human Performance (HU)

- Understand and properly use the applicable HU tools for tasks.
- Use Self-Check/STAR and Point-Touch-Verbalize for component identification and equipment manipulation.
- Use Peer Check (PC) as requested.
- Use Independent Verification (IV) and Concurrent Verification (CV) as required by procedure.
- Use Three-Way Communication when providing direction or exchanging critical information.
- Use the Phonetic Alphabet when communicating alphanumeric information.
- Use Flagging to enhance component identification techniques.
- Identify and eliminate error–likely situations.

6. Procedure Use and Adherence (PU&A)

- Verify correct procedure revision.
- Ensure procedure is appropriate to accomplish desired task.
- Use procedures according to designated level of use.
- Obtain clarification on procedures steps to ensure understanding prior to taking action.
- Adhere to procedures as written.
- Stop and revise identified procedure errors prior to continuing use.
- Use Placekeeping. Designate step completion using circle/slash.
- Re-verify conditions prior to continuing a suspended evolution.
- Take ownership for procedure quality.

7. Briefs

- Prepare and review material prior to conducting briefs.
- Use Shop Briefs to cover:
  - Safety moment and related topics.
  - Plant status, including abnormal plant conditions and line-ups.
  - Protected Pathways.
  - Increased monitoring requirements for adverse conditions.
  - Important scheduled and in progress work.
- Conduct the appropriate type of Pre-Job Brief (PJB) by considering the task and level of risk associated with it.
- Review Operating Experience (OE).
- Ensure “positive engagement” of all personnel.
- Conduct Post-Job Debriefs to identify follow up actions and Lessons Learned.

8. Shift Turnover

- Maintain an accurate turnover log.
- Review the turnover log and walk down the work area.
- Discuss the information face to face.
- Evaluate your relief for excess fatigue or fitness for duty concerns.
- Verify properly certified and/or qualified employees prior to assuming duties.
- Read and review logs status sheets and supporting documentation.
- Actively communicate:
  - Status of ongoing activities.
  - Out of specification parameters and abnormal line ups.
  - Degraded conditions and required monitoring and/or contingency plans.
- Transfer responsibility.

9. Accountability

- Own your performance - results and behaviors.
- Report to work on time and fit for duty.
- Maintain safe and professional dress.
- Meet or exceed minimum work hour expectations.
- Expect and be receptive to feedback and coaching.
- Review your work and sign to verify quality and content.
- Know your development areas and take actions to improve.
- Report problems to your supervisor.
- Verify that your personal working file reflects your performance.
- Ensure you receive routine formal appraisals.

10. Integrity and Transparency

- Use independent effort when being tested.
- Speak up and tell people the facts.
- Know what your signature means – read, understand, and agree.
- Always honor your commitments.
- Follow the Nawah rules and standards at all times.
- Be open and honest during investigations.
- Own mistakes made and events incurred; share lessons learned.
- Ask “why?” Raise concerns.

11. Condition Reporting and Resolution

- Initiate Condition Reports (CRs) for problems, errors made or found and concerns; notify your supervisor.
- Perform thorough and insightful apparent, common and root cause evaluations.
- Identify and implement timely corrective actions to prevent recurrence.
- Verify effectiveness of corrective actions.
- Review sources of nuclear event reporting and take appropriate actions.

12. Training and Qualification

- Participate in training – “Come to learn”.
- Report for training by the scheduled starting time and return from breaks on time.
- Be accountable for your training performance and professional conduct.
- Wear appropriate Personal Protection Equipment (PPE) in training labs.
- Learn the Nawah Fundamentals.
- Practice to gain proficiency.
- Provide mentoring to those in need.
- Provide meaningful feedback on the quality of training.
- Own and maintain your current licenses and qualifications.
- Verify qualifications prior to performance of work tasks.
- Identify training needs to improve performance.
- Pursue additional skills to broaden qualifications and enhance professional development.

13. Intolerance for Unexpected Equipment Failure

- Champion initiatives that promote material condition excellence.
- Proactively identify degraded equipment condition and system performance.
- Initiate work requests.